

**ABRAHAM EZRA MICHELbacher (1899-1991): THE  
BIBLIOGRAPHY OF ABRAHAM EZRA MICHELbacher  
AND *SYMPHYLA* NAMED BY HIM**

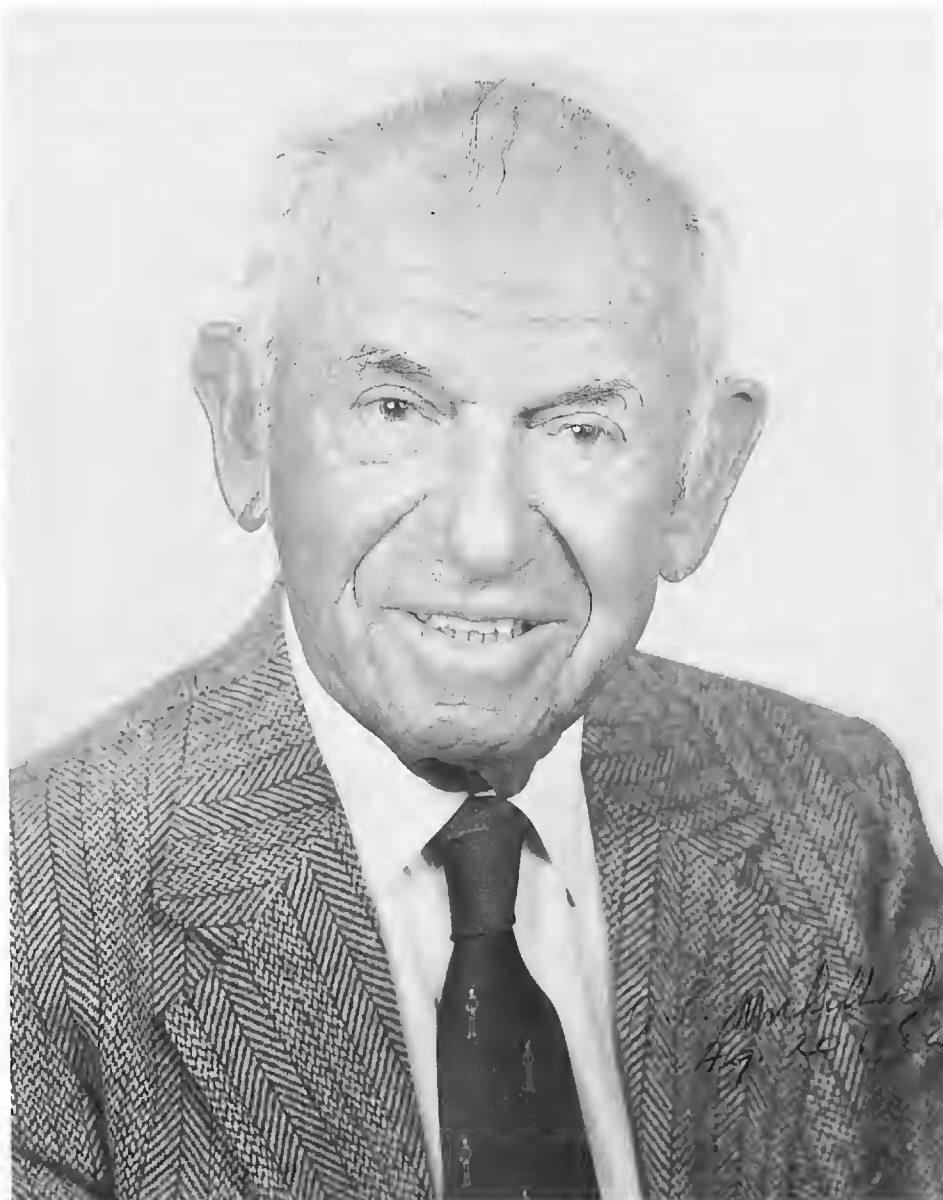
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Abraham Ezra Michelbacher, better known to his friends as "Mickie," died in his home in Berkeley on 22 May 1991, at the age of 92. His vigor and memory had been rapidly declining for a few months.

Mickie was born on 12 Apr 1899, in Riverside, California, to Ezra and Ida Michelbacher. Most of his youth was spent at Riverside. He loved the beach and went to Newport Beach frequently throughout his life. During his younger years, he earned money by clamming, fishing, and working on dredges in the bay. During high school, he supplemented his income by picking oranges. He was always very competitive and later claimed that he was the fastest orange picker in the region (his working associates would never doubt this assertion). Although he worked for a while as a commercial albacore fisherman, he loved to fish as a recreation and continued to do so during vacation breaks throughout his life.



loved to fish as a recreation and continued to do so during vacation breaks throughout his life.

Before coming to Berkeley, he studied agronomy at the University of California, Riverside (then called the Citrus Experiment Station). In subsequent years he was to become well acquainted with Harry S. Smith ("Prof. Harry" to his devoted students and followers in the field of biological control at Riverside and elsewhere). Prof. Harry considered Michelbacher one of the few enlightened insecticide entomologists, and Mickie's appreciation of the value of biological control agents which grew out of their discussions was later reflected in the philosophical base of his approach to pest control.

At Berkeley, Mickie decided to major in economic entomology under the direction of Professor E. O. Essig. "Prof. Essig" became his mentor and very good friend and the two had a very strong, enduring, lifelong relationship. Essig's love of flowers and gardening was shared by Mickie, and the rose garden at his home became a showplace and source of flowers for numerous social events on the University campus.

Mickie earned a B.S. degree in 1927 and continued into the graduate program. On 30 Mar 1929, Martha Meyer became his beloved wife, friend and companion. His graduate study was completed with the awarding of the M.S. and Ph.D. degrees in 1930 and 1935.

While Michelbacher was a graduate student, Prof. Essig organized an informal student and faculty group called, "Fitchia." Both a social and entomological organization, participants met periodically in various homes including that of the Michelbachers. This pattern was extended by Mickie by means of what became a famous steak barbecue at the coastal town of Bolinas. One particularly memorable picnic took place on 7 Dec 1941, when, during the barbecuing activity the car radio announced the attack on Pearl Harbor.

Under the guidance of Prof. Essig, Michelbacher worked on the systematics of the garden centipede (*Symphyla*) for his doctoral dissertation. He ultimately became the world authority on this group.

Because Mickie was too old for military service during World War II, one of his most important contributions to the war effort consisted of helping to develop a research program for the Army Quartermaster Corps. This involved the testing of various food packaging materials for resistance to insect attack. Included in the program were entomologists on the Berkeley campus and food technologists at Davis. Research results were published in various scientific journals.

It would be difficult to detail Mickie's contributions to the field of entomology, but a resumé supplied by William W. Allen at a memorial service on 31 May 1991, touches on the highlights.

Over the past 50 years, much has been written and said about insect pest management, the pros and cons of biological control, and the use of insecticides. Books and articles abound by many authors; however, Mickie's research laid the foundation for present day insect control and he predicted its difficulties.

In his research on alfalfa, he clearly demonstrated the importance of *Apanteles* as a parasite of the alfalfa caterpillar and he stressed the general importance of fostering natural enemy suppression. He developed economic injury levels to preserve the activity of the parasite which is widely preached today and he advocated early cutting as a way to minimize the need for insecticides.

In his research with melons, tomatoes and walnuts, he clearly showed that non-selective insecticides would seriously increase aphids, scales and mites and he devised strategies and timing to alleviate these difficulties.

His work in the 1930s and 1940s really laid out all the principles of integrated pest management that have been researched, practiced, and preached over the past 50 years. His contributions are not widely recognized, because Mickie was more interested in his research than preaching about his work, and also he was a very modest person.

Graduate students who worked with Mickie included Bill Allen, Vern Stern, Hal Reynolds, Bob van den Bosh, and others. They learned field research methods from Smith (they all received Ph.D.s) and lots of practical entomology and philosophy from Mickie.

As a field researcher, and in his personal life, Mickie always ran a tight ship both in the use of his time and money. Field trips started at 4:00 in the morning, and if the work was well enough along, a milk shake was allowed for lunch. Successful graduate students that survived this regime then carried on the Michelbacher tradition. A few of the many outstanding included: Oscar G. Bacon, who became Chair of the Department of Entomology at Davis; Harold T. Reynolds, who became Chair of the Department of Entomology at Riverside; Ray F. Smith, who was a longtime Chair of the Department of Entomological Sciences at Berkeley; Minos Tzanakakis, Chair of the Department of Entomology at the University of Thessaloniki, Greece; and William W. Allen, Associate Dean for Research in the College of Natural Resources at Berkeley.

Michelbacher took an early retirement in 1960 and began a series of extended and shorter collecting trips during the next 27 years. Accompanied by Martha, Mickie travelled extensively in the Western Hemisphere in conjunction with the studies of P. D. Hurd and E. G. Linsley on the systematics and ecology of squash bees (*Peponapis* and *Xenoglossa*). The Michelbachers provided valuable data and specimens which were reported in a series of publications between 1964 and 1971.

In 1962, Michelbacher discovered an area near Gridley, California, containing large populations of squash bees. For the next several years he and Martha, with periodic assistance from others, made detailed records of flower and nest site activities of the bees. These included foraging periods and frequency, nest site requirements, including ground cover, and other new information about this bee. At the close of the study, burrows were excavated, and missing elements in the life history determined. This information led to an experimental transfer of bees from Gridley to the Oxford Research Tract at the University of California, Berkeley. Following successful establishment, the resulting populations were followed for several years. This raised the possibility of introducing them into other parts of the Old World (they are an exclusively New World group). Michelbacher discussed the matter at an International Congress of Entomology in Vienna and with colleagues in Moscow at a subsequent international congress. One attempt to introduce the bees into Hawaii failed for a variety of reasons.

In addition to work on squash bees, Mickie spent a substantial amount of time in the southwestern deserts collecting bees for the Essig Museum, with special emphasis on bee visitors to *Larrea*, sunflowers, and other plants of interest to his colleagues.

On 19 Aug 1965, the now famous "Nogales incident" occurred. The Michel-

bachers had parked their car on the shoulder of the highway about 50 miles south of Nogales, Mexico, in order to collect bees in the adjacent field. A drunken driver in a pick-up truck crashed into their car, resulting in the death of one of the truck's passengers. In accordance with Mexican law, Mickie was arrested for contributing to homicide and taken to jail in Nogales. By some deft maneuvering, he was able to arrange a transfer to a hospital room but remained under guard. (He was charged for both the room and the guard.) He was later permitted to move into a motel but could not leave Nogales without authorization. A long, drawn out procedure followed and he was finally permitted to leave after posting a \$2400.00 bail. Intervention by the U.S. Department of State and officials of the University of California contributed to this release. On principle, Mickie refused to forfeit bail and continued his legal action. In February 1966, another hearing was held and he was more or less exonerated, paying a small fine, and, miraculously, having his bail returned. One condition of his release, however, was that he could not drive in Mexico for three years.

In 1967, the Michelbachers went on a collecting trip with John Chemsak to the Cape region of Baja California. This was the beginning of a close and congenial relationship as evidenced by 10 subsequent trips to Mexico, Costa Rica, Honduras and eastern California. Mickie loved to collect beetles and with the pressures of bee collecting removed, he once again became a very efficient beetle collector. He especially liked beating, a technique learned from Dr. E. C. Van Dyke, and was happiest when piles of cut slash were available nearby. Since beating is most effective during cool temperatures, Martha and Mickie went out at dawn. By the time their companion would rise for breakfast, they had collected dozens of cerambycids. Mickie also became adept at aerial net collecting but had little enthusiasm for light collecting.

The adventures and episodes during the field trips were numerous and varied, many humorous, and a few, serious. Mickie loved to recall incidents which had occurred during the early trips to Baja California and Chile with E. S. Ross. Subsequent trips provided a lifetime of memories.

The poverty encountered in Latin America was appalling to Mickie. On most of the trips to Mexico, the Michelbachers brought used clothing and bags of sweets which they distributed in the rural areas.

Michelbacher held active membership in many scientific societies and institutions. Included were the American Association of Economic Entomologists (member); American Association for the Advancement of Science (Fellow); Entomological Society of America (Fellow); California Academy of Sciences (Fellow); Pacific Coast Entomological Society (President and Honored Member); Northern California Entomology Club (President); the Western Society of Naturalists (member); the Commonwealth Club of San Francisco (member); and the scientific fraternities Alpha Zeta and Sigma Xi (member).

It would be easy to continue to enumerate the activities, attributes, accomplishments and virtues of Abraham Michelbacher. For our purpose, it is sufficient to recall that he was a great field ecologist who laid the foundation for modern ecological pest control. He was a superb teacher of first and second generation insect pest management researchers and practitioners. Mickie was one of the kindest and most generous people it has been our privilege to know. Several generations of students can attest to his assistance in times of need.

It has been an honor and privilege to have been associated with Mickie and he will be missed.

Mickie is survived by his wife, Martha, and daughter, Virginia Ingham.

#### NEW TAXA DESCRIBED BY MICHELbacher

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